

Jumping Electrons Notes

Light – has both _____ and _____ characteristics.

***Can change speed in different substances, faster in air and slower in water.

Photon – a packet of light that has the _____

Special Equations:

$$c = \lambda f$$

c = speed of light (3×10^8 m/s)

λ = wavelength (in meters)

f = frequency (in 1/s)

$$E = hf$$

E = Energy (joules)

H = Planck's Constant (6.63×10^{-34} j.sec)

F = frequency (in 1/s)

***Since electrons act like a wave, this explains why

Bohr said that when an electron moves from one shell to another, light is emitted as a photon of energy.

***We treat electrons as a particle most of the time. The wave characteristic is only important when discussing the movement "around" the nucleus.

Problem:

If the frequency of a light wave is $455/\text{s}$, what is the wavelength?

If the frequency of a light wave is $225/\text{s}$, what is the energy of the light wave?